RECORDS OF THE PAST

VOL. VI PART VI

JUNE, 1907

PRE-INDIAN INHABITANTS OF NORTH AMERICA

PART II

MAN AND THE ELEPHANT AND MASTODON

THERE is much evidence that man was cotemporary with the elephant and mastodon in North America. These pachyderms, having continued into post-Glacial time, it is not a matter of surprise that human implements, chiefly spear and arrowpoints, are found in the drift deposits sometimes in close proximity to the remains of the elephant.[21]

Remains of the mammoth have been found in several places in Minnesota. The Dakota Indians, according to Rev. S. W. Pond, related traditions of one or both. The following is quoted from a manuscript, still unpublished, written by that missionary, and recently presented by his son, S. W. Pond, to the Minnesota Historical Society.

Their chief object of worship was Unkteri, the mastodon, though they held many erroneous opinions concerning that extinct species, and did not know that the race was extinct. They had seen bones of the mastodon, pieces of which they had in their possession,[22] and they were too well acquainted with comparative anatomy not to know that it was a quadruped. He described the species as resembling the buffalo or ox, but of enormous size. As they worshiped many other animals it was natural that the mastodon, which so much exceeded all others in size, should be adopted as their chief god, as indeed, he was; and to his worship their most solemn religious festivals were dedicated. They supposed that the race

[21] See RECORDS OF THE PAST, October, 1903; *Recent Mammoth Discoveries* [Illustrated.]

[22] In 1834. Parkman names this deity Oanktayhee. *LaSalle and the Great West*, p. 249.

was still in existence, and, as they were never seen on land, and their bones were found in low wet places, they concluded that their dwelling was in the water. Their bones were highly prized for their magical powers, and perhaps were as valuable to them as relics as those of the saint are to a devout Catholic. A Dakota told me that he had discovered some of the fossil bones in the lake opposite Shakopee but was unable to raise them without some boat larger than a canoe.

Dr. E. D. Neill[23] confirms this statement concerning the mastodon, saying: "The bones of the mastodon, the Dakotahs think, are those of Oanktayhee, and they preserve them with the greatest care in the medicine bag."

It was in 1838 and 1840 that Dr. Albert C. Koch discovered in Missouri the remains of man closely associated with the skeleton of an animal to which he gave the name *Missourium theristocaulodon*,[24] which he regarded as more analogous to the hippopotamus than to the elephant or mastodon. The bones had the appearance of having been burned and were mingled with stone spear and arrow points, and tomahawks. Dr. Koch gives traditions of the Osage and of the Shawnee Indians respecting the animal. The reported circumstances indicate that the mastodon was killed by the aborigines, but to what age the strata in which the fossils were entombed belonged it is impossible to determine from Dr. Koch's description, but it is plain that it was a sedimentary formation. If the region could again be examined in the light of recent advance in Glacial geology, it is not impossible that it would be found to belong to the loess of the Iowan Glacial stage.

Prof. G. C. Swallow, of Missouri, informed Dr. J. W. Dawson that he had opened two burial mounds in that state, "on which vegetable soil 2 ft. thick had accumulated, and around which 6 ft. of alluvial silt had been deposited. In this alluvium was found the tooth of a mastodon."[25]

In Pottawattamie County, Iowa, Prof. J. A. Udden has mentioned the discovery of the bones of the elephant, of *Bison latifrons* and of *Ovibos cavifrons*, and of a grooved stone ax in the loess, the last under 30 ft. of loess and at 40 ft. from the entrance of the cellar excavation. This country is in the southwestern part of Iowa, bordering on the Missouri River. The ax had "an adhering incrustation of calcareous material on one side, evidently deposited by ground water." (*Iowa Geol. Survey Report*, Vol. XI, p. 261.)

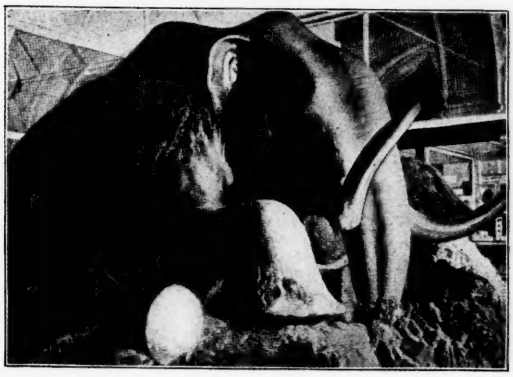
In *The Epoch of the Mammoth*, by James C. Southall, is given a summary of the evidence of the cotemporaneity of man and the mammoth. He says there are some cuts in Waldeck's work on Mexico and Yucatan, which unquestionably represent the head of the elephant, and which were taken from the ruins at Palenque.

---

[23] *History of Minnesota*, 4th edition, p. 55.

[24] See *American Journal of Science*, Vol. 40 (1841), p. 58, for an account of this animal and of this skeleton. It is there pronounced a mastodon by Dr. Horner. In this determination Dr. Koch concurred in recounting his discovery in 1857 (*Trans. St. Louis Acad. Sci.*, Vol. 1, p. 61).

[25] See Dawson's *The New World and the Old*, p. 185.



SIBERIAN MAMMOTH IN THE SITUATION IN WHICH IT WAS FOUND IN 1900. [See RECORDS OF THE PAST, Vol. II, pp. 312-317.]

Bradford, in *American Antiquities,* p. 226, relates the discovery according to Clavigero, of an entire mammoth skeleton in a tomb made apparently for its reception.

There is nothing improbable in the supposition that the mastodon was known to the mound builders. It is of some significance that a tradition of this animal (or the mammoth) existed among the Indians. Mr. Jefferson, in his *Notes on Virginia,* mentions it as existing among the Delawares, and a French officer by the name of Fabri mentions it in 1748 in a letter to M. Buffon, as prevailing among the Canada tribes. (Southall.)

According to W. W. Mather (*Nat. Hist., N. Y.*, Part IV, p. 44), this tradition existed among the Indians of the northwest. Mr. B. F. Stickney, Fort Wayne, Ind., who was for many years the Indian agent of the United States for the tribes northwest of the Ohio, informed him that "particular persons in every nation were selected as the repositories of their history and traditions; that these persons had others who were younger selected for this purpose continually and repeatedly instructed in those things which were handed down from generation to generation; and that there was a tradition among the Indians of the existence of the mastodon; that they were often seen; that they fed on the boughs of a species of lime tree, and that they did not lie down, but leaned against a tree to sleep."

Finally, it may be mentioned, that in Crawford County, Wis., Colonel Norris, an assistant of the Bureau of Ethnology, has reported the discovery of "pieces of a mammoth tusk," in 1882, at the bottom of a burial mound, which, having a diameter of 70 ft., rose 10 ft. above the surrounding general surface.[26]

Several of the effigy mounds of Wisconsin have apparently the form of the elephant, while from some of the mounds of Iowa have

[26] *Report of the Bureau of Ethnology,* 1883-84, p. 19

been reported several stone pipes having the form of the elephant. The authenticity of the latter has been called in question by Mr. H. W. Henshaw, of the Bureau of Ethnology, but vigorously reaffirmed by the officers of the Davenport Academy of Science,[27] and with such evidence and argument that there seems to be no good reason for further doubting them. The so-called "Monitor" base of these pipes is good evidence of their genuineness as "Mound-builder" pipes. It is improbable that a fraudulent manufacturer of sandstone pipes should uniformly choose the elephant for his pattern, and further, should uniformly put them on the base so characteristic of the Mound-builder.

An account of the traditions and tales based on the discovery of elephant remains in Europe and America is given by Prof. W. B. Scott, in *Scribner's Monthly Magazine,* April, 1887 (vol. 1). He concludes that : "Altogether the evidence is strongly in favor of the view that the ancestors of the existing Indian races were familiar with these monsters," and that, "not many centuries ago the elephant was an important element in American life."

How lately the elephant (and mastodon) became extinct in North America is an interesting question on which but little direct light can be found.[28] That these animals lived into quite late post-Glacial time is indicated, not only by the condition of the bones themselves, but also by the recentness of the soil and peat which cover them in some cases. That they had a long residence here, even prior to the later phases of the Pleistocene, is indicated by the deposits of clay and loess with which they are covered in other cases. If they were extant in America when the Mound-builders flourished—say, in the Ohio Valley—it is quite certain that there would be some trace of them either in the form of bones or of imitative shapes made by the rude sculptors of those times. The absence of their bones in the mounds and the comparative scarceness of all other evidence, taken in connection with the traditional worship of Unkteri, given by missionary Pond, as already stated, indicates that these mammals were exterminated before the Ohio mounds were built. In Wisconsin and Iowa, further toward the northwest, have been discovered "elephant pipes," and "elephant mounds," as well as pieces of elephant tusks within the mounds, which indicate an earlier knowledge of the elephant, and it may be that the elephant, driven from the Mississippi Valley toward the northwest, finally expired in Alaska and Siberia, leaving only traditions of his prevalence in North America in temperate latitudes. From all the evidence that can be gathered it seems to be safe to assume that not more than 1,000 years have elapsed since the extinction of the elephant, and the writer is disposed to assume that not more than 500 years have passed since the Mound-builders left the Ohio Valley.

---

[27] *Proc. Davenport Academy of Science,* Vol. IV, 1885.

[28] See RECORDS OF THE PAST, Feb., 1904, *When did the American Mammoth and Mastodon become extinct?* by John Uri Lloyd.

Mr. J. V. Brower has published in his work, *Minnesota,* plate IX, a representation of a bronze medal found near Hastings, Minn., by Mr. Howard W. Crosby, and remarks that "other exactly similar casts have been found associated with Indian artifacts." This medal on one side shows in relief the profile of a woman's head, and "waterfall" head dress, and on the other the figure of an elephant. It bears the date 1446, and in the margin on one side the letters D . I S O T T A E A R I M I N E N S I. It has a hole near the top indicating that it had been suspended by a cord, probably about an Indian's neck, and carried as an ornament. It antedates the discovery of America by Columbus. It has been ascertained that an Italian noble family had the elephant as its armorial symbol, and it is evident, from the fact that several others of the same kind have been found in the northwest, that these medals were produced in considerable numbers and sent to America for trade with the aborigines. Hence they can have no such bearing on the aboriginal association of the Mound-builder with the elephant as has been supposed.

THE WISCONSIN GLACIAL EPOCH

The earliest discovery of human remains in the deposits of the Wisconsin epoch was made by Dr. C. C. Abbott. Since his announcement (1876), which led to much discussion and further search in the gravels in which he stated he found the rude "paleoliths," several confirmations of his discoveries have resulted in establishing the fact that in the undisturbed terrace gravels of the Delaware River in New Jersey, are numerous rude implements or "rejects" of human workmanship, as well as human skeletons.

The following illustrations of the "implements" found in the Trenton gravels are taken from the reports of Dr. Abbott to the Peabody Museum:

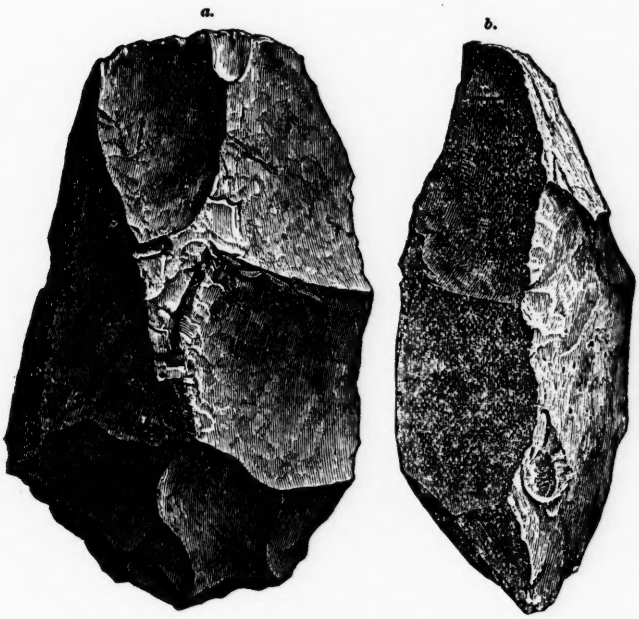
It is an interesting coincidence that the rude argillitic "paleoliths" of the Trenton gravels are of the same grade of stonecutting as the gravel-found quartz chips of Little Falls, Minn., and that neither of these localities, at the date of formation of the gravel was occupied by as high a type of stone-worker as had existed previously in the Peorian inter-Glacial, or in the Iowan Glacial epoch. Gravel man perhaps frequented the ice-margin and abandoned the country to the possession of more warlike and more skilful intruders from the south as fast as the country became habitable for the southern tribes. The newcomers would naturally resort to the same localities for material for their weapons and other implements.

The discussion of the evidence of man in the Trenton gravels has been prolonged and earnest, coördinate with its importance. For some years after the announcement it was widely discredited, owing to persistent suggestions that the articles found were of modern origin and may have been, and probably were, accidentally introduced from

above. This was supported by the discovery of Indian camp sites and workshops some distance above, in the Delaware Valley, where the natural rock (argillyte) outcrops, and whence similar implements were derived.

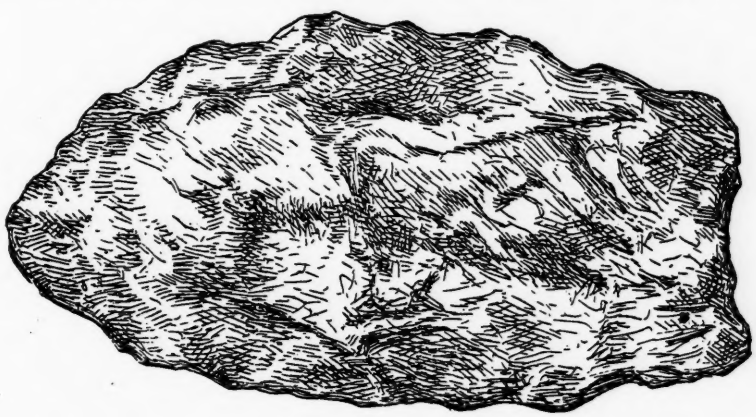
Mr. Ernest Volk, under the direction of Prof. F. W. Putnam, of the Peabody Museum, Cambridge, Mass., has prosecuted a thorough and long-continued investigation of the locality. He has established, apparently on the basis of actual excavation and observation, not only the occurrence of "paleolithic" argillyte implements attributable to the modern Indian, but two other periods of stone-working man. The next older than the Indian is exemplified by a series of jasper and quartz objects that have been found by him in the yellow sand and gravel that immediately underlies the soil. The age and origin of the sand are still a subject of investigation, some having regarded it of Glacial age and origin, some alluvial and of later date, and some as dune-sand, of indefinite age, but post-Glacial and possibly quite modern. It is obviously a dependent of the river valley and due to river action, and analogous to a similar stratum of alluvial sand which accompanies many, if not all, rivers within the influence of the glacial waters during their flood stage, but prior to the complete dissolution of the northern glaciers. It is not yet plain how these jasper objects were incorporated within this sand. Below this sand is a considerable thickness of tumultuously confused coarser sand and gravel, in which are many boulders of several inches, even more than a foot, in diameter. This has plainly been acted on by water, and in places seems to show some stratification. In this stratum have been found most of the Glacial artifacts which have been announced by Dr. C. C. Abbott, about which the heat of the controversy has revolved. Although Dr. Abbott, the first discoverer and chief supporter of the idea of Glacial man, was confirmed by several others who independently gathered the same kind of argillyte tools from this deposit, yet the doubts that were raised by others, some of whom made what they considered thorough search and excavation in this gravel stratum, were so confidently and adroitly presented, that it remained still to reach the conclusive demonstration. This was achieved by Mr. Volk December 1, 1899, when he discovered, and photographed before removal, a fragment of human femur in the cross-bedded green sand that lies below this stratum of unassorted gravel. This bone was thought, on careful examination, to show the traces of human workmanship. It was presented, with the accompanying facts, by Prof. F. W. Putnam at the New York meeting of the society of *Americanists*, October 20, 1902, where the subject was thoroughly discussed, and the opinion was expressed, even by those who had hitherto questioned the evidence, that, with this discovery, the case of Glacial man was so strong that there was no use to oppose it any longer.

Recently Dr. C. C. Abbott has reviewed the question in a publication entitled, *Archaeologia Nova Caesarea,* and has there classified the



CELT

Explanation.—The above represent a specimen "found in the undisturbed gravel of the bluff facing the Delaware at the depth of 6 ft. from the surface." (Abbott.)



SPEAR-SHAPED IMPLEMENT

Explanation.—"The specimen, fig. 4, was taken from the bluff facing the river, but two miles further south than the exposure near Trenton from which most of the specimens have been gathered. It was discovered in a *perpendicular exposure* of the bluff immediately after the detachment of a large mass of material, in a surface that had but the day before been exposed, and had not begun to crumble. The specimen was 21 ft. from the surface of the ground, and within a foot of the Triassic clays that here are exposed. Directly over it, and in contact, was a boulder of large size, probably weighing 100 pounds; while at a distance of 5 ft. above was a second, much larger, boulder. The character of the mass, which was that of the bluff as exposed on the bank of the river near Trenton, was such as to render it impossible that this specimen of a clearly artificially shaped pebble could have reached this position subsequently to the deposition of the containing bed." (Abbott.)

remains found at and near Trenton. He gives evidence that there have been three epochs of human occupancy which can be deduced from the facts, viz:

The Indian, agricultural, quartz and jasper worker, user of argillyte.

The pre-Indian, a nomad, user of argillyte.

The Glacial man, fabricator of argillyte implements; perhaps the Eskimo, nomad.

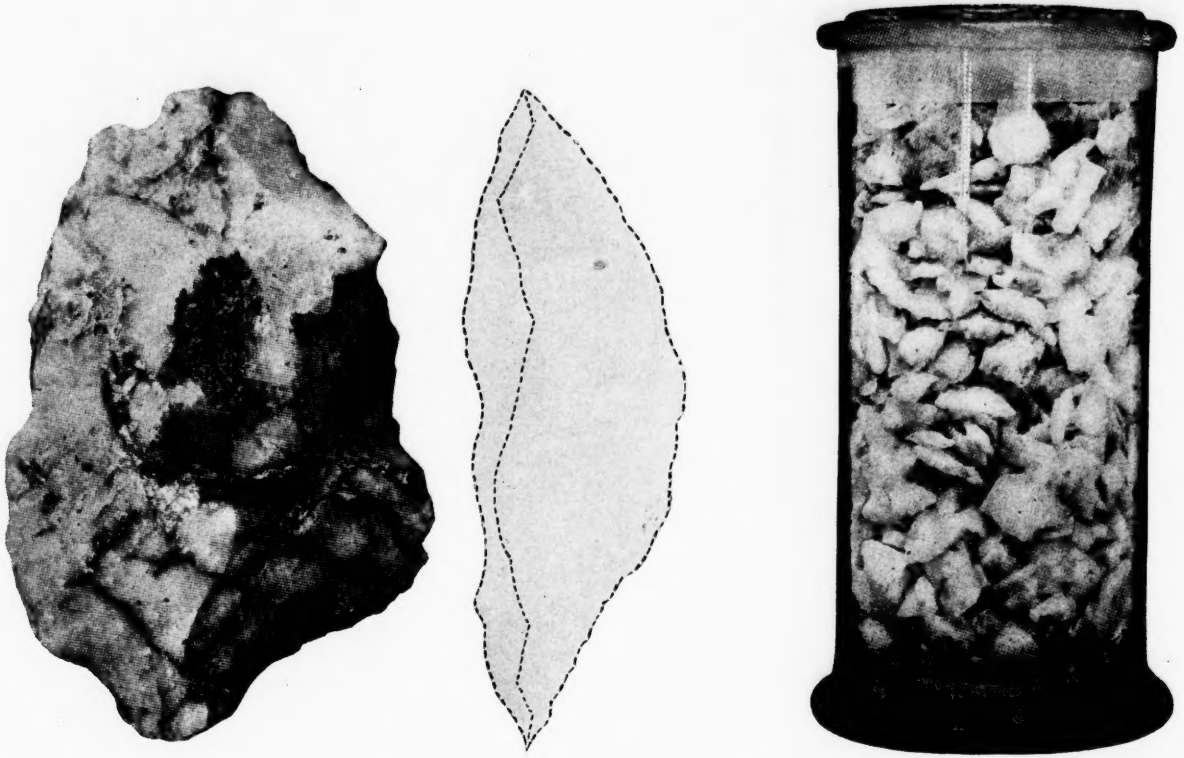
Section of the Delaware gravels near Crow Creek, Trenton, N. J.:

1. Black soil	7 in.
2. Yellow loam	10 in.
3. Coarse, pebbly gravel, with small boulders, mainly unassorted	44 in.
4. Cross-bedded green sand, at the bottom of which the bone was found and photographed in place	21 in.
5. Impervious clay	3 in.
6. Clayey sand, cross-bedded	15 in.
7. Sand, clay, and boulders, passing below the talus	7 in.

Attention may be called here to the great similarity of the gravel section at Trenton to that at Little Falls, Minn. In both cases there is a surface sandy loam, below the soil, and below the sandy loam is a considerable thickness of unassorted coarse gravel, that at Trenton (No. 3) carrying numerous stones several inches in diameter. It is in this confused layer, at Little Falls, that the white quartz chips have been found, and from which, at Trenton, the numerous argillyte artifacts have been taken by Dr. Abbott.

The frontispiece to this article is from a photograph made December 30, 1899, and kindly furnished by Dr. Geo. F Wright for this use. This view, compared with the descriptive section above, will make it clear that the human femur was well within the mass of the gravel of the terrace, and below the main mass of unassorted gravel and stones.

But little later the writer announced the discovery of artificial quartz chippings at Little Falls, in Morrison County, Minn. At first these chippings were pronounced to be not only earlier than the so-called mound-builders, but earlier than the Glacial epoch. Considerable discussion has also followed this discovery. The latest result, however, based on a new examination by the writer, published in Mr. Brower's *Kakabikansing,* assigns these chippings to a period when the dissolution of the great glaciers of the Wisconsin epoch maintained at Little Falls a vastly swollen river, which covered the entire terrace flat from the drift bluffs on the east side to similar bluffs (though less marked) on the west side, a distance of about two miles. This great river may have continued 1,000 or 2,000 years, and annually its sur-



QUARTZ FRAGMENTS AND CHIPPINGS FROM THE GRAVEL BEDS AT LITTLE FALLS

From Brower's *Kakabikansing*

face must have been covered with floating ice and floodwood. These substances were clogged and jammed by the existence of a rocky island in the river, composed of slate with quartz veins. The aborigines seem to have resorted to this island and to have worked the quartz, distributing their chips and refuse over the surface adjacent, in time of low water, the same to become buried under the gravel by the disturbing and jamming action of ice and floodwood in time of high water. The fact that quartz chippings and even perfect arrowpoints of white quartz are found to be the product of manufacture by the modern Indian, at the same locality, and also more widely in the state, has introduced an element in this investigation which has caused some confusion, and all the quartz chips have been referred, by some, to the Indian of the region. The quartz chips are found in the disturbed upper portion of the Glacial gravels of the terrace flat, but rarely at a depth exceeding 4 ft. They have not been found in the undisturbed gravel, though they may exist there in small numbers.

The age of the Little Falls quartz-worker is, therefore, supposed to be during the first one or two thousand years after the retirement of the ice-margin from that locality, or about six or seven thousand years ago, while the continental ice-sheet still rested on the northern half of the state. It has been suggested in consonance with the trend of the latest anthropological research that these quartz-chippers were the ancestors of the present Eskimo. When it is remembered that nowhere throughout a wide extent of country toward the south, abandoned by the continental ice-margin, could any stone except drift pebbles be found suitable for the manufacture of hunting and spearing weapons, it is plain that the first exposure of this quartz would be seized upon with eagerness by the natives for the purpose of supplying themselves with that much needed material. They would visit the spot annually whenever the river was sufficiently low. If the Eskimo were the Minnesota quartz-workers they must have followed subsequently the retreating ice-margin, as it passed over Canada, reaching at last their present icy confines in the Arctic region, and leaving their Minnesota haunts to immigrants that pressed in from the more genial southern latitudes.[29]

---

[29]The writer desires to make some corrections of improper references to his early work at Little Falls:

1. Prof. G. F. Wright has refigured the chert implements found and published in the report in which they were first announced in his work *Ice Age in North America*, p. 537, and in the discussion of *Man and the Glacial Period*. But these chert implements were not found in the gravel, but on the surface, and may be of later origin.

2. Prof. Haynes has stated (*Science*, vol. 21, p. 318, 1893), that the writer found a copper implement in the boulder-clay, and quartz chips in the boulder-clay—which must be attributed to careless reading, as he never reported any such discovery.

3. Prof. W. J. McGee has also mis-quoted the writer in an article in *Popular Science Monthly*, saying that he has reported "polished stone and copper implements as well as human bones from the same aqueo-glacial terrace of the Mississippi near Minneapolis." The context allows here the inference that these things were found, like the quartz chips, within the gravel of the terrace, but they were found on the surface by other parties and may be ascribed to more modern origin.

Gilbert's account of an ancient hearth at the bottom of a well 30 ft. deep, on the south side of Lake Ontario, indicates human residence at about the same date as the Eskimo quartz-workers of Minnesota. It was in a series of elevated beach deposits left by the flood-stage of Lake Ontario, caused by the obstruction of its northern discharge by the receding Wisconsin glacier,[30] roughly estimated at about 7,000 years ago.

THE MASTERMAN AXE

From *American Geologist*

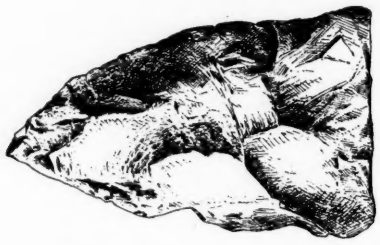
Claypole has described with particularity the occurrence of a polished, banded slate or greenstone axe in the drift deposits of northern Ohio, buried apparently under the lacustrine clay of the Wisconsin epoch.[31] This axe was much weathered, the surface alteration penetrating in all directions toward the center, so as to leave but a core retaining the original color, and it was suggested by Professor Claypole that the implement had suffered exposure in sulphuretted waters, but as described it is reasonable to suppose that it was oxidized before its burial. If this supposition be sustained it would prove the existence of man in the next preceding inter-Glacial epoch (Peorian) capable of making a perfect polished axe in no wise inferior to those of the present Indian tribes. The credibility of this discovery, however, is impaired by the asserted discovery by the same man, in the same vicinity, of quite a number of other implements in the same laminated clay, while, so far as known, no other has been reported. Such a dis-

[30] *Science*, vol. 8, p. 528, 1886. According to Mr. Gilbert this hearth was discovered by Mr. George H. Harris, who first published a description of it in *Semi-Centennial History of Rochester, Science*, vol. 8, p. 564. See also *American Geologist*, April, 1889, p. 173.

[31] *American Geologist*, vol. 18, p. 302, Nov., 1896; *Human relics in the drift of Ohio.*

covery should either be exactly verified by a geologist, who appreciates the significance, or be confirmed by a number of other reports of the same kind. Still the remarkable alteration, which the exterior of the axe has undergone, certainly indicates an age greater than the historic Indian, and marks this stone as a unique specimen. Its approval and publication by Professor Claypole, who was careful in forming his opinions, is an evidence of its authenticity as a Glacial implement.

In 1886, Mr. H. T. Cresson found a rude "paleolithic implement" of gray flint in the vicinity of Medora, Ind., about 100 miles west of Cincinnati. This was just outside the glaciated area of the state, in the midst of a rough country of knobs of Subcarboniferous strata, the valleys being partly filled with Glacial gravel and silt. The specimen was found beneath about 11 ft. of gravel, loam, and soil, firmly fixed beneath a boulder in such a position that it appeared to have been deposited there at the time the drift was formed. It was in "undisturbed gravel," on or near the top of older gravel or till, but in an aqueous deposit,[32] which was apparently the product of the combined



GRAY FLINT IMPLEMENT

Explanation.—Implement of gray flint in gravel 11 ft. from the surface. Bluff, East Fork of White River, Jackson County, Ind. Found by H. T. Cresson.

ice and water action in a confined, small valley or gorge, near the ice-margin of the Wisconsin epoch. This specimen is 6½ in. in length, of a triangular shape, and 3¾ in. in greatest width, represented by the following plate, actual size:

Subsequently, Mr. Cresson also found similar specimens in a till deposit at Claymont, Del. He had at an earlier date (1866) found the same kind of rude implements in a "cave shelter," near the headwaters of Naaman's Creek, in the same county in Delaware, in a deposit be-

[32]There is some discrepancy between the diagram published in the *Proceedings of the Boston Society of Natural History*, vol. 24, p. 151, and that in Wright's *Ice Age in North America*, p. 536, each purporting to exhibit the geologic relations of this specimen. In the former the large boulder is represented to be in stratified gravel which lies upon an older gravel, and the aspect of the boulder in such a position is exceedingly anomalous. In the latter the boulder is wholly below the gravel, and lies in or on a deposit which is said to be "probably till," and it has the appearance of belonging to the till. Mr. Cresson's drawing was made from memory after leaving the spot, and the author admits its inaccuracy, a circumstance which indicates a lack of appreciation of the importance of the find and of the need of exact definition.

lieved to be cotemporary with the drift formations which underlie the city of Philadelphia,[33] i. e., the Columbia formation, and hence much older than the Wisconsin epoch, and more likely to belong with the Iowan, yet the fossils reported indicate an age more recent and perhaps post-Wisconsin. No extinct species were found in this cave.

"Paleolithic" implements have been found in gravels the parallel of those at Madisonville, and at Medora, Ind., in eastern Ohio (Tuscarawas County), at Newcomerstown, and described by Mr. W. C. Mills and Prof. G. F. Wright.[34] It is in the terrace gravels which line the valley of the Tuscarawas River. The specimen is of black flint from the Lower Mercer limestone of the region, 15 ft. below the surface of the undisturbed terrace.

Prof. G. F. Wright has described the occurrence of a plainly marked, but rude flint implement in Glacial gravels and sand, under about 8 ft. of undisturbed cross-bedded stratification, in Jefferson County, Ohio, "The condition of the stratification in all of the superincumbent 8 ft., which was closely examined by me, was such as to convince me that the implement was not intrusive, but had been deposited with the remainder of the material from the terrace."[35]

What may be the relation to the Glacial epochs of those human relics that have been reported by Whitney and Becker found beneath lava sheets in California, or that of the Nampa figure found in Idaho, described by Wright, it is not necessary here to inquire. It can be said, however, that they tend to confirm the foregoing as to the great antiquity of man in America, and to make him cotemporary not only with the Glacial epoch, but with the elephant and other great mammals now extinct.

While probably most American geologists and archæologists fully accept the foregoing as demonstrating the Glacial age of man in America, a few still remain skeptical, and with superfluous caution, or with carping criticism, call attention to defects in the evidence, and are inclined to explain all these instances by some accidental circumstances that may have caused the intrusion of the specimens into the drift since the deposition of the same. Others attribute the reports to faulty observation and mistaken interpretation.[36]

The term *paleolith* has come into discussion in this connection. Those who do not admit the Glacial age of man in America have tried to show that these so-called paleoliths do not represent "paleolithic man" as he has been identified in Europe, but are simply unfinished tools of neolithic man, indeed "rejects" of the present American races, or instruments that have been partly chipped out and kept for further manufacture into perfect tools at subsequent and more convenient dates. In this state they are not believed to be finished implements,

[33] *Proc. Bos. Soc. Nat. Hist.*, vol. 24, 1880.
[34] Tract No. 75, Western Reserve Historical Society, Cleveland, Ohio, Dec. 12, 1890.
[35] *Popular Science Monthly*, Dec., 1895.
[36] This is perfectly exemplified by a review of the evidence in a late publication by the Bureau of Ethnology (*Bulletin* 30, under *Antiquity.*)

and have been *cached* by the toolmaker as reserve stock, to be used when he needed them. It may require yet more time and further discovery to bring archæologists to agreement on this point. There have been found *caches* of flints of nearly identical form presenting the "paleolithic" coarse finish, numbering over 100 in one place. In such a case it is difficult to understand why they should have been dressed to the same form, on the supposition that they are simply stored for further treatment. It is also known that amongst the "neolithic" Indians of the plains, specially in Kansas and Nebraska, many specimens were no more nearly "finished" than these cached groups. It may be necessary to allow "paleoliths" of both dates—i. e., of Glacial man, unassociated with polished stone. and of the modern Indian, who certainly was also acquainted with a higher type of manufacture. But whether one or the other, they show the handiwork of man and it matters not. If they were cotemporary with the drift deposits in which they are reported to have been found they date from the Glacial epoch.

Late researches into the linguistic characteristics of the American tribes have shown conclusively that the tribes are widely separated, and must have had long independent histories. This result has been reached by Powell and his assistants in the Bureau of Ethnology at Washington. The native languages are 58 within the United States. If they were of one origin they have required a long lapse of time to acquire this differentiation, and long residence in their habitats as known at the discovery of America. Compared with central and eastern North America, the Pacific states are divided into smaller areas, characterized by separate languages. As in Europe, even within France or in England, the old inhabitants slowly acquired dialectic differences, after long contiguous, sedentary residence, so pronounced that they could not easily understand each other, so it seems in America the early inhabitants diverged in their speech more and more until they became as different as the various languages of the Aryan race of to-day.

Another of the results of the recent research of the Bureau of Ethnology has been to establish the American race, or "Amerind," as indigenous in America, without probability, and almost without the possibility of derivation from Europe or Asia. It shows some mongoloid characteristics, but they are so slight, and geographically so restricted that if the American race was derived from Asia, either that separation was so long ago that the original traits have been overcome by characters later developed, both linguistic and physical, or the migrating units were so numerous and so contrasted in language that the derivative tribes outnumber the present Asiatic sources from which they may have sprung. According to Dr. O. T. Mason,[37] "Contiguous to the Eskimo in America are the Athapascan family on the west, and the Algonquian on the east. Contiguous to the Eskimo in Asia are the

[37] *Smithsonian Report*, 1894, p. 536.

Chukchis, and these are joined to other unclassed peoples. Now the Chukchi language and the Athapascan language, and the other Asiatic and American languages, are noted for their lexical and grammatical differences, and not for relationships." But he also says that the latest linguistic researches do not justify the assertion that the American languages stood alone in morphology.

In short, the tendency of archæological and anthropological research during the last 30 years has so strongly pointed to the independence of the American type of mankind that it has been asserted by several leading authorities that there is as much evidence pointing to America as to Asia as the primal birthplace of man, at least, that the American race is apparently as remote in time as any of Europe or Asia (Kollman, Powell, Fowler).

All theories, therefore, which seek to make the American race an exotic immigrant from other continents are confronted with the contrary opinion of the highest archæological authority. This, of course, excludes the idea of Messrs. Squier and Davis that the so-called Mound-builders were something more than the ancestors of some of the present Indians, and that other fancy of Mr. George Catlin that the Mandans are the descendants of a lost party of Welshmen. The idea of Ignatius Donnelly,[38] that the Central American countries formerly had commercial connection with the Mediterranean shores, through a now submerged land in the Atlantic, applies to more recent, almost historic time. The story of Plato may be based on fact, but the influence which such a connection must have had on the aboriginal tribes of North America could have been but slight and evanescent.

Influence of Recurring Glaciation.—That the earliest Americans were influenced in their migrations by the recurring epochs of the Glacial period can hardly be questioned, and it is apparent that the tribes dwelling in the central and eastern portions were much less sedentary than the Pacific tribes. This difference may have been due largely to the greater influence of the recurring continental ice-sheets in the valleys of the St. Lawrence, the Ohio, and the Mississippi, including also that of the lower Missouri. It is reasonable to infer, therefore, that the succession of inhabitants and of their arts of manufacture, at any locality, would indicate less a normal rise in skill and grade of industry than sequence of tribes subject to forced migration primarily under variation of climate. We have seen that, so far as the evidence available can afford us a guide, a neolithic stone culture preceded, at numerous places in the Mississippi Valley, a "paleolithic" stone culture. We have to infer that the neolithic tribes of the Peorian and Iowan epochs were expelled for a time from their ancestral seats, and that an Arctic (perhaps Eskimo) race of paleolithic skill succeeded them during the Wisconsin epoch, to be again succeeded by neolithic man of the present. It is yet to be seen whether all the "pale-

[38] *Atlantis: The Antediluvian World.* New York, Harper & Brothers.

olithic" stone implements that have been found on or near the surface of the ground in North America, or what part of them, can be distributed chronologically and geographically so as to fall into this scheme of Glacial geology, for as they have been found and recorded in archæological literature they are much mixed up with neolithic, and in numerous instances they have been assigned to the present neolithic Indian tribes.

The far-reaching influence of the recurring Glacial epochs of the continent necessarily affected tribes whose habitats were further south than the glacial limit. These more southern tribes felt the same impulse toward migration still further south. They came into conflict with their neighbors. They drove them out or were themselves exterminated or absorbed. In some places the population increased and perhaps became congested. The reactions which tended to repel these immigrants from the north became less and less energetic as the pressure dwindled in more southern latitudes, and a permanently sedentary stage of habitation could have remained only with those peoples who were beyond the reach of these disastrous climatic severities, or were screened, like those of Yucatan and Guatemala, as suggested by Morgan, from the routes of direct migration. The changes were so slow that generations came and went without serious collisions, i. e., without such conflicts as resulted in the sudden displacement of whole tribes. The change was so gradual that the victims could not realize it, much less detect its cause. The Mexican and Central American civilizations, while affected probably by an influx of barbarian intruders, must have survived through the Glacial epoch or epochs, and may date back to a remote Pleistocene antiquity, coeval with Egyptian or Chinese.

On the retirement of the glacial conditions, which was probably also very gradual, there was an opportunity, and hence an impulse, toward a northward migration. Those lands formerly uninhabitable, either from superabundance of water or because of too great cold and too much ice, became inviting fields for the spread of the crowded inhabitants. The entire fauna, including man, and the flora, which had been driven southward, now began to retrace its steps and to reoccupy the renovated lands. The Eskimo followed the ice-margin, but the other tribes lingered along the more genial streams and chased the elk, and, perhaps, the buffalo, over the prairies, or hunted the fox and the bear in the mountains. This return must have been accompanied by many sub-incidents of war, separation, and migration. Some moved further east and some further west, as convenience or safety dictated. Some tribes expanded widely, and some were reduced to the smallest numbers, or were exterminated. Some carried with them traces of the civilizations with which they had come into contact, and perhaps, as in the case of the tribes that settled in the Ohio and Mississippi valleys, and became known distinctly as "Mound-builders," established in more

northern latitudes a culture that showed some of the characteristics of the southern civilization. But in the main they came back as they went—barbarians, tinged with lingering traits of savagry.

There were, therefore, extensive movements both north and south, and minor ones east and west. Many attempts have been made to adjust into some systematic scheme the numerous signs of alliance among the tribes and of migrations from one part of the country to the other, which are proved by linguistic similarities. Other attempts have been made to assign a place of origin, not to say in Asia or Europe, but a primal seat in North America, from which all the tribes may have spread. The most notable one, perhaps, is that of Morgan, which makes the initial point in the valley of the Columbia River. Others assume the Atlantic seaboard, in the latitude of Maine, or in the latitude of Florida. Some say the tropics of South America, some Alaska, some Mexico. There is, no doubt, evidence in favor of all these claims, since there is no doubt that the ice-epochs compelled extensive migrations, and permitted extensive refluxes. It seems probable, accepting the late results of the Bureau of Ethnology as expressed by Powell, that these conflicting and often contradictory theories can be ascribed to the diverse movements incident to the recurring ice-epochs, studied from different points of view and in different parts of the country. The latest general movement northward, under ameliorating climate, as already stated, may have begun from 7,000 to 8,000 years ago, that being the approximate date of the close of the Wisconsin ice-epoch, but more probably several thousand years later. When this migration was completed and the stocks became in a manner fixed again as to location, it is probable that they severally occupied nearly the geographic areas represented by the linguistic map of Powell.[39] The fact that the various languages have not blended by intermixture into one, or into a few, but have maintained their identity, proves long sedentary isolation. It is apparent also from this map that the tribes did not in all cases move as an entirety, but that occasionally parties of more or less number and importance lingered and maintained themselves while the mass of the tribe continued their northward movement. Wherever they may have finally stopped it was certainly where their habits and tastes found their most congenial environment, subject, of course, to the dominance of superior tribes. The superior stocks had their first choice of the country. The Dakotan, lover of the prairie and of the buffalo, and worshipper of the mastodon, last of all seized upon the great plains of the Mississippi and of the Missouri, yielding the country east of the Mississippi mainly to the Algonquian. In general the mountainous and timbered regions were, from choice or necessity, avoided by the Dakotan when in the plentitude of his power and dominion. No doubt even at this early day the enmity and warfare which existed between these stocks when the white man

[39]Seventh annual report of the Bureau of Ethnology, 1885-86,

came into the country, had already sprung up. That this hostility was an inheritance from the remote past is asserted by both peoples. There were numerous fluctuations in the boundary line separating their domains.

The importance of the Glacial epoch, therefore, in any attempt to investigate the early history of man in America, can hardly be overestimated. It caused the migration or the destruction of the inhabitants of the northern part of North America and projected an ice-sheet over the northern part of the United States. It finally released its grip on the country less than 10,000 years ago, and the north temperate latitudes became habitable again, probably about 7,000 or 8,000 years ago. This great event serves as a datum for measuring human as well as geological history.

BIBLIOGRAPHY

Abbott. On the discovery of supposed paleolithic implements in the Glacial drift in the valley of the Delaware, near Trenton, N. J. Report of the Peabody Museum, Vol. 2, p. 30, 1877: Ditto, p. 225, 1878: Primitive Industry: or illustrations of the handiwork in stone, bone, and clay, of the native races of North America, Salem, Mass., 1881.

Aughey. United States Geological Survey of Colorado, Hayden, annual report, 1874, p. 225, Washington, 1876.

Babbitt. Vestiges of Glacial Man in Minnesota, Am. Assoc. Adv. Sci., Minneapolis meeting, 1883, pp. 385-390. Ditto, Am. Nat., June and July, 1884.

Barbour. Ancient Inhabitants of Nebraska, RECORDS OF THE PAST, Vol. VI, pp. 40-46.

Brower. Kakabikansing. Memoirs of exploration in the basin of the Mississippi, Vol. 5. St. Paul, 1902.

Chamberlin. The Geologic Relations of the human relics at Lansing, Kansas. Jour. Geol., Vol. 10, Oct.-Nov., 1902.

Claypole. George F. Wright and his critics. Pop. Sci. Month., April, 1893; Human relics in the drift of Ohio, Am. Geol., Vol. 18, p. 302, Nov., 1896.

Cresson. (Implement from the Indiana gravel). Proc. Bost. Soc. Nat. Hist., Vol. 24, p. 150, 1888: Early man in the Delaware Valley, Proc. Bost. Soc. Nat. Hist., Vol. 24, 1888.

Hershey. Archæological Notes in Central Minnesota. Am. Geologist, Vol. 24, p. 283, 1889.

Holmes. Are there traces of man in the Trenton gravels? Jour. Geol., Vol. 1, pp. 15-37, 1893; Traces of Glacial Man in Ohio. Jour Geol., Vol. 1, pp. 147-163, 1893; Vestiges of early man in Minnesota. Am. Geologist, Vol. XI, p. 219, 1893; Fossil human remains found near Lansing, Kans., Am. Anthropologist (N. S.), Vol. 4, Oct.-Nov., 1902.

Hrdlicka. The Lansing Skeleton. Am. Anthropologist (N. S.), Vol. 5, pp. 323-330, 1903; The crania of Trenton, N. J., Bull. Am. Mus. Nat. Hist., Vol. 16, 1902.

Lewis. The antiquity and origin of the Trenton gravel. In Abbott's "Primitive Industry." 1881.

McGee. Geological History of Lake Lahontan, I. C. Russell, Mon. XI, U. S. Geological Sur., p. 247. (Obsidian implement in the loess); Paleolithic man in America. Pop. Sci. Month., Vol. 34, 1888; Geologic antecedents of man in the Potomac Valley. Am. Anthropologist, Vol. 2, p. 227, July, 1889; An obsidian implement from the Pleistocene deposits of Nevada. Am. Anthropologist, Vol. 2, p. 301, 1889; Man and the Glacial period, Am. Anthropologist, Jan., 1893.

Owen. The bluffs of the Missouri River. Trans. 7th Inter. Geog. Cong., Berlin, 1900, pp. 686-690; More concerning the Lansing skeleton, Biblio. Sacra, July, 1903, pp. 572-578.

Putnam. (Paleolithic implement discovered by Dr. C. L. Metz, at Madisonville, Ohio), Proc. Bost. Soc. Nat. Hist., Vol. 23, p. 242, Nov. 4, 1885; Ditto, Reprint from Ohio Arch. Hist. Quart., Dec., 1887; Thirteenth report of the Curator of the Peabody Museum. In the report of the president of Harvard University, 1895-96, p. 4; Address as retiring president of the American Association for the Advancement of Science. Proc. A. A. A. S., Vol. 48, p. 14, 1899; Evidence of the work of man on objects from the Quaternary caves in California, Am. Anthropologist, Vol. 8, p. 229, April-June, 1906.

Shimek. Loess and the Lansing man. Am. Geologist, Vol. 32, p. 353, 1903.

Udden. The Megalonyx beds in Kansas. Am. Geologist, Vol. 7, p. 340, 1891.

Upham. Recession of the ice-sheets in Minnesota and its relation to the gravel deposits overlying the quartz implements found by Miss Babbitt at Little Falls, Minn., Proc. Bost. Soc. Nat. Hist., Vol. 23, pp. 436-449, May, 1888; Man in the Ice Age at Lansing, Kans., and Little Falls, Minn., Am. Geologist, Vol. 30, pp. 135-150, Sept., 1902; Primitive Man and his stone implements in the North American Loess, Am. Antiquarian, Sept.-Oct., 1902.

Whitney. The auriferous gravels of the Sierra Nevada, p. 258, *et seq.*, Cambridge, Mass., 1879.

Williston. A fossil man from Kansas, Science, Aug. 1, 1902; Ditto, Am. Geologist, Vol. 35, p. 342, 1905; Kansas University Geological Survey, Vol. 2; Trans. Kansas Acad. Science, 1897.

Winchell. Primitive Man at Little Falls, sixth annual report of the Minnesota Geological Survey for 1878, p. 53; Geology of the Mississippi Valley at Little Falls. In Brower's Kakabikansing, pp. 89-104, St. Paul, 1902; Was Man in America in the Glacial period? Bull. Geol. Soc. Am., Vol. 14, pp. 133-152, Apr., 1903; The Lansing skeleton, Am. Geologist, Vol. 30, p. 189, Sept., 1902; The Pleistocene Geology of the Concannon farm, near Lansing, Kans., Am. Geologist, Vol. 31, pp. 263-308, May, 1903.

Witter. Arrow points in the Loess of Muscatine, Iowa, Am. Geologist, Apr., 1892; Ditto. Science, Vol. 19, p. 22, 1892.

Wright. Age of the Ohio gravel beds, Proc. Bost. Soc. Nat. Hist., Vol. 23, p. 427, 1888; Pre-Glacial man in Ohio, Ohio Arch. Hist. Quart., Dec., 1887; The Ice Age in North America, and its bearings upon the antiquity of man, New York, D. Appleton & Co., 1889; Man and the Glacial Period, New York, D. Appleton & Co., 1892; Evidences of Glacial Man in Ohio, Pop. Sci. Month., May, 1893; Mr. Holmes' criticism of the evidence of Glacial Man, Science, Vol. 21, p. 267, May 19, 1893.

NEWTON HORACE WINCHELL.

St. Paul, Minn.

卐 卐 卐

WORK OF THE OHIO ARCHAEOLOGICAL SOCIETY

THE Ohio State Archæological and Historical Society held its twenty-second annual meeting at Columbus, Ohio, on March 22. Gen. Roeliff Brinkerhoff was reëlected President; Mr. George F. Bareis and Prof. G. F. Wright, Vice-presidents; Mr. E. O. Randall, Secretary and Editor; Mr. Edwin F. Wood, Treasurer; Prof. W. C. Mills, Curator and Librarian. In addition to membership fees the society receives an annual appropriation of about $8,000 from the state legislature. A fair proportion of this sum is spent in care of the monuments, left in charge of the society, and in the exploration of mounds under the charge of Professor Mills. The work accomplished by the society is already very important, and the prospects before it are very promising.

Before the organization of the society, interest in the archæological and historical remains of the state was principally shown by those who lived outside its borders. The celebrated collection of relics made by Squier and Davis, in connection with the earliest exploration of the mounds, was so little valued that it was allowed to go out not only from the state, but from the country, having been purchased by Mr. Blackmore, of Salisbury, England, where it is safely housed in a section of the Blackmore Museum, compelling the citizens of Ohio, who would study their relics, to make a pilgrimage to that distant center of archæological interest.

Soon after the founding of the Peabody Museum of American Archæology and Ethnology, at Cambridge, Mass., Prof. F. W. Putnam directed his attention to the prehistoric remains of Ohio, and col-

lected a vast amount of material from the mounds and burial grounds explored by him and his agents. All this material was transferred to the Museum in Cambridge, where it is accessible to the general public. The Peabody Museum, also, at an expense of several thousand dollars, purchased the farm in Adams County, Ohio, upon which was situated the celebrated Serpent Mound. This was thoroughly explored by Professor Putnam, and restored to its original condition, and has now been generously given to the Ohio Society, and is under their care, being kept in order and open to the public without expense.

At the time of the Columbian Exposition in Chicago, in 1893, Mr. Warren K. Moorehead was employed to excavate some of the most important mounds on Paint Creek, Ohio, near Chillicothe, and an immense amount of most interesting material, consisting of implements and ornaments of copper from the Lake Superior district, obsidian from the Rocky Mountains, shells from the Gulf of Mexico, mica from North Carolina, and wagonloads of flint implements, was taken to Chicago, and has been there preserved in the Field Museum.

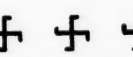
Meanwhile, the Smithsonian Institution has been continually increasing its stores of Ohio relics preserved in the National Museum at Washington.

When the State Historical Society of Wisconsin was established, its enterprising curator at once sent agents to Ohio to secure, by gift and purchase, all the attainable manuscrips bearing upon the history of the Northwest Territory, which included Ohio; so that the historian of Ohio must go to Madison, Wis., to find the data necessary for his work.

Such was the situation which the Ohio Society has been compelled to meet. Slowly the interest in its work has been increasing, and the results already are such that a great enlargement of its work is opening before it in the immediate future. Through its continuous and systematic reëxploration of the mounds, it is found that their treasures have been by no means exhausted, so that there are already collected in the museum duplicates of nearly everything to be found in the collections taken out of the state. In reëxploring the Harness mound, and other mounds near Chillicothe this last year, a great amount of new light has been shed upon the manner of burial among the early Mound-builders, while the implements and ornaments discovered bear renewed witness to the extensive commerce that prevailed among them, bringing together material from almost every part of North America.

Among the most startling discoveries by Mr. Mills during the past summer is that of the capacity of the early Mound-builders for counterfeiting gems. Among the objects most valued by the early Mound-builders were pearls. One necklace of pearls, which had been exposed to the disintegrating elements so long that it was now worthless, is pronounced by an expert to have been worth $10,000. This appreciation of pearls led the artisans of that early day to manufacture beads out of clay, and cover them with malleable mica, brought from North Carolina. So skillfully was this done that for a time Professor Mills supposed them to be genuine pearls.

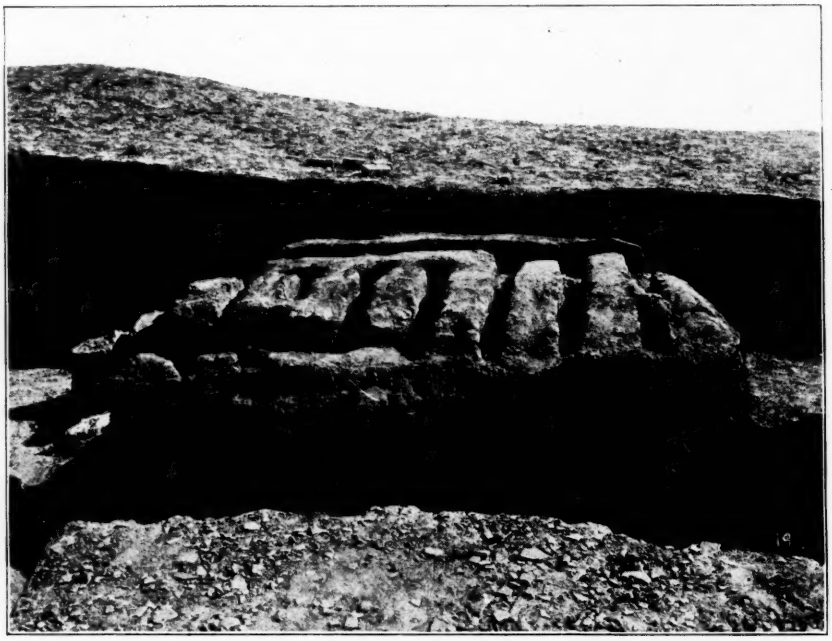
Already the museum of the society has outgrown its temporary quarters, but a bill is before the legislature, which is likely to be passed at the next session, to erect a special building for the society at a cost of $200,000.



ANCIENT POTTERY FURNACES

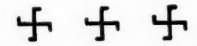
OUR earliest knowledge of most vanished races is gained from the pottery fragments. In most cases the manner of molding or turning, the means employed for decorating and method of burning has to be surmised from the characteristics of the pottery itself. In Greece, where ceramic art reached such a high degree of perfection, our only knowledge as to how it was fired is gained from a few painted vases which indicate the ovens used. Concerning the Roman method of burning pottery we have a number of examples of pottery-furnaces, one of the best known being that unearthed at Pompeii, while others have been found in Roman towns in Germany and England. Most of these "kilns were constructed partly of burnt, partly of unburnt brick, the interior, floor, and outside of the roofs being covered with a strong layer of cement. They consisted of two main portions, the fire-chamber with its adjuncts, and the vaulted chamber above, in which the objects to be baked are placed. The fire-chamber was usually circular, with a projection in front, the *praefurnium,* which had either a vaulted roof, as at Castor and Heiligenberg, or a gabled roof formed of pairs of tiles, as at Rheinzabern. Through this the fuel was introduced, consisting chiefly, as charcoal remains show, of pine-wood. The fire-chamber was either divided up, as at Castor, by walls radiating from a central pillar which supported the roof, or by rows of pillars in a line with the entrance, as at Rheinzabern and Heiligenberg. Holes were bored in the roof to allow the heat to penetrate through, but the arrangement varies; at Heiligenberg each division of the furnace was vaulted, making grooves along which the holes were bored. The oven where the pots were placed has been destroyed in most cases, but we know that it consisted of a floor, a wall with entrances, and a vaulted dome."

It will be noted that the general principles of these Roman pottery-furnaces have been retained to the present time. But the Greeks and Romans were not the inventors of this general style of furnace or at least this form of furnace had been in existence for centuries prior to the earliest such remains yet discovered in Europe as is shown by the extremely well-preserved pottery-furnace which was discovered some years ago in the Tigro-Euphrates Valley at Nippur. The accompanying illustration gives a good idea of the structure of this pottery kiln. The date of this furnace is about 2700 B. C. "The top of it was about thirteen feet by seven. Its height was nearly four feet. It consisted of a series of elliptical arches, beneath one



BABYLONIAN FURNACE OF THE TIME OF ABRAHAM
From Clay's *Light on the Old Testament*

end of which the fire was kindled. The flames and smoke ascended between these arches, which were separated by spaces. Tiles were placed upon the top of the vertical flues thus formed. They served the purpose of covering the chambers, thus forcing the smoke and flames to the rear of the furnace, where the flue was located. At the same time, these tiles formed the top of the stove. At the back of the oven, a flue was constructed the entire length of the stove, whence the smoke escaped. Stoves similar in type are used at the present time in the cities of that district. One writer is of the opinion that a room was built around the oven in which the pottery was arranged; while another thinks that the pottery was placed beneath the arches, as is done in modern kilns, not unlike this archaic furnace of Abraham's time."



PREHISTORIC LEAD FURNACES

THE "prehistoric" or "Indian lead furnaces," which renewed activity in the lead fields of eastern Iowa, northern Illinois, and southern Wisconsin is now bringing to notice, are not new to archæologists. The first prospectors in that section discovered numerous abandoned lead mines and furnaces of rude con-

struction and limited capacity. The furnaces or smelters consisted of funnel or bowl-shaped excavations on the hillsides, near the outcroppings, which were lined with slabs of limestone. Across the bottoms of these hopper-like excavations were placed long, narrow stones, so arranged as to form grates.

A channel, spout, or trough of clay led from the opening under each grate, on the down-hill side, to a small catch-basin a little farther below. This catch-basin, also lined with clay, was intended to receive the product of the furnace.

The ores were thrown into the hopper and dry fuel thrust into the trough upward and backward, so as to come under the grate.

A fire applied to the fuel soon brought molten metal down through the grate to the trough, which carried it to the catch-basin below, where it cooled.

Col. George W. Featherstonhaugh, geologist and surveyor, sent out by the War Department, in 1832-3, noticed many of these abandoned lead furnaces still undisturbed by modern mining operations, but he could not determine whether or not they were erected or used by the Indians.

However, Wm. R. Smith, one of the early presidents of the Wisconsin State Historical Society, described them as "Indian lead furnaces," and stated* that "at many of these primitive smelting places the white settlers extracted a profitable harvest of rich lead from the slag and refuse of the Indians' smelting."

John Shaw made a trip from St. Louis to the mouth of Fever river in 1815 for lead. In June, 1816, he made another (in a boat on the Mississippi) this time ascending the Fever river to where Galena now stands. He could talk French or the Indians would not have permitted him to go, being at that time pro-British and hostile to Americans. He found 25 lead furnaces such as I described. Fuel and ores were mixed, and molten lead was run into bowl-shaped holes in the earth. The pigs were called mats, and weighed 70 pounds each. He took enough for 70 tons. This lead was melted by the Indians, but under the direction and pay of French Indian traders, who received the money for it.

As Indians forget nothing, and as the numerous Sac and Winnebago tribes which occupied the country about the lead "diggings" for years after the whites began mining and smelting there knew nothing about these so-called "Indian furnaces," there would seem to be small ground for believing that they were built or used by the aborigines with whom the Anglo-Saxon is acquainted.

The mound-builders, the makers of copper implements, and the pre-Columbian miners of lead and copper in Wisconsin and Michigan have yet to be satisfactorily identified.

FRANK ABIAL FLOWER.

Washington, D. C.

*_Documentary History of Wisconsin_, p. 354.

PALESTINE EXPLORATION FUND

THE resumption of work at Gezer by Mr. Macalister has received the cordial approval of our friends. They desire to see the utmost thoroughness used, for obviously the deepest remains are the most valuable. As Dörpfeld has gone beneath the excavations of Schliemann, and some of the best Babylonian finds lay below the supposed first stratum, so our work hereafter must in all cases be carried to the bottom. Of course, in Palestine, one may reach the rock and the original cave dwelling, but even so there is not a little danger of overlooking something important.

The natural impatience which was felt in England and this country over the delay in obtaining the last permit was prolonged by the singular course which the Turkish officials took in sending word to Gezer rather than to the British embassy, and the work had been started before London knew of it, and then the information must come over here.

The decease at Salem, Mass., of Miss Eliza Ropes gives our work the second legacy which it has received in America. The first was in 1901, from the Rev. Walter G. Webster, of Providence, R. I., who was a subscriber and an earnest student of Biblical archæology. That legacy amounted to $1,000. This second one is not from a subscriber and amounts to $2,000. These two legacies in 40 years emphasize the fact that no large gift has ever been received. The largest annual subscriptions do not exceed $100. Considering the enormous wealth of many Christians and Hebrews it is remarkable that, while large sums are bestowed on other objects of a sacred character, this fundamental work of the elucidation and confirmation of the Bible has been so generally ignored. It is, so to speak, from the mouth of babes and sucklings that God has thus perfected praise.

The researches carried on for many years by Prof. James A. Montgomery, of the Philadelphia Divinity School, have resulted in a fine volume of which all Americans will be proud. He has made an exhaustive study of his subject, covering the origin, the history, the theology, and the literature of the Samaritans, and gives us a richly illustrated and very well arranged book.

THEODORE F. WRIGHT.

42 Quincy Street, Cambridge, Mass.

卐 卐 卐

STONE CIRCLE AT ABERFELDY IN PERTHSHIRE, ENGLAND.—A megalithic monument, near Aberfeldy, consisting of 3 circles of standing stone, is noted in a recent issue of the *Reliquary*. The inner circle is 25 ft. 6 in. in diameter, the middle one 41 ft. 3 in., and the other, 58 ft. The largest stone is 6½ ft. high.

BOOK REVIEWS

BENARES, THE SACRED CITY*

BENARES, the Sacred City of the Hindus, whose natural location made it, before the dawn of history, the center of primitive worship for the inhabitants of the Ganges Valley, is rich in ancient history and is still full of interest to all students of the religions of the East. In a recent book by Mr. E. B. Havell the history of this city is briefly sketched from 1400 B.C., when the Kasis, one of the Aryan tribes of northern India, established themselves at this point in the Ganges Valley, to the present time and the modern worshipers, who crowd the sacred city.

A large part of the book is devoted to a history of Hinduism, from the Vedas to the rise of Buddhism. The descriptions of the present day scenes, however, and the magnificent illustrations are the most attractive part of the volume. Far too little space is devoted to the results of the recent excavations which throw so much light on the actual history of the city and the forms of religion practised there.

The recent excavations on the site of Deer-park have revealed a great number of "votive stupas, or memorial mounds, large and small, some containing relics, others merely marking a place associated with events in the life of the Buddha, or with his numerous fabled pre-existences."

Many of the recent excavations have confirmed the early account of this city by Hiuen Thsang, a Chinese pilgrim, who came to India to study the teachings of Buddha about the latter part of the VII or early part of the VIII century A.D. We quote the following description of the city, as condensed in Mr. Havell's book:

> At the north of Benares, and to the west of the Ganges, there was, he [Hiuen Thsang] says, a stupa, or memorial tower, about 100 ft. high, built by the Emperor Asoka. Near it was a stone column, highly polished and of blue color (probably lapis lazuli), in which the reflection of Buddha might always be seen. At a distance of nearly two miles farther on, northeast from the river, he arrived at the Deer-park, where there was a monastery, built in 8 sections, within a walled enclosure. There were pavilions of one and two stories for the accommodation of the monks, 1,500 in number, who were studying the doctrine of the "Little Vehicle." In the midst of the enclosure was a temple-monastery, the lower part of stone, surmounted by a tower of brick faced with stone, or perhaps by the curvilinear *sikra*, or spire, similar to that of modern Jain and Hindu temples in northern India, which was crowned by the melon-shaped *amâlika* wrought in embossed gold. The *amâlika* formed the base of the finial.

**Benares, the Sacred City.* Sketches of Hindu Life and Religion, by E. B. Havell, A. R. C. A., Principal of the Government School of Art, Calcutta. With many illustrations. London: Blackie & Son, Limited, 50 Old Bailey, E. C. Glasgow, Dublin, and Bombay. 1905.

Round about the tower, or spire, in tiers rising one over the other, were a hundred niches, each containing an image of Buddha, which Hiuen Thsang supposed to be of gold, but which were probably only of bronze or copper gilt, like those now found in Buddhist shrines and monasteries in Nepal, Sikkim, and Tibet. The temple contained a life-size statue of Buddha, made of brass, in the attitude of preaching. * * *

To the southwest of this temple was a stone stupa, built by Asoka, which had become partly buried, though it was still 100 ft. in height. It was built to mark the very spot where Buddha, "having attained to perfect knowledge," began to expound to his fellow-seekers after truth the wisdom he had gained under the Bodhi tree at Gaya.

In front of it Asoka had placed a memorial column, about 70 ft. high, polished like a mirror, "so that all those who pray fervently before it see from time to time, according to their petitions, figures with good or bad signs." Another stupa close by marked the place where the 5 disciples sat in meditation in the Isapattana Deer-park, when they reached it after their desertion of Buddha in the Vindhyan mountains. Hiuen Thsang adds that there was a multitude of sacred monuments within the enclosure of the Deer-park monastery, and describes many tanks and stupas round about it.

The recent excavations have laid bare the remains of the Asoka column, mentioned by Hiuen Thsang. Unfortunately, the greater part of the inscription on this column is missing. However, "the splendid lion capital, in the style of ancient Persepolis, is almost intact, and just as Hiuen Thsang described it, 'smooth as jade and shining like a mirror.'" "The fragments of the wheel, representing the Dharma, have been discovered, and the design of the capital makes it probable that all 3 symbols, which correspond to the mystic syllable *aum*, of the Hindu trinity, were placed above it."

The excavators have discovered everywhere signs of the great catastrophe which destroyed the monasteries and temples of Sarnath. "Charred bones and wood, lumps of melted brass, half-fused bricks, and calcined stone testify to the fury of the invaders." Numerous important buildings and votive stupas, and beautiful sculptures representing events in the life of Buddha, have been uncovered. There are also numerous "miniature stone shrines of non-Buddhist origin," showing that before Deer-park was specially appropriated by the followers of Buddha, it was a common retreat for all religious devotees.

Hiuen Thsang graphically describes what he saw in one of these forest retreats. There were Buddhists from various provinces lying in the thickets, dwelling in caves, or huts made of leaves and branches, or under the shade of the trees. Jainas in white robes, the wandering Bhiksus, followers of Krishna, Brahmin students, ascetics undergoing various forms of self-torture, philosophers, and adepts in sacrifices, and many others—all disputing, discussing, and explaining, with the tolerance of each other's views, which, at least in early times, was characteristic of Indian religious sects.

As was stated before, the special charm of this book lies in the descriptions of the scenes of to-day—not its architectural features, but the people thronging the streets. The city, in his words, "is as a microcosm of Indian life, customs, and popular beliefs," furnishing a never-ending fascination. "Here the student may read a living com-

mentary, more convincing than any record ever written, painted, or sculptured, of the life of ancient Egypt, Babylon, Nineveh, and Greece. Here the artist may see before him in the flesh the models of classic sculptors and painters, which might have served for the Panathenaic frieze, the statuettes of Tanagra, and the frescoes of Pompeii. There is an indescribable charm of color in the throng of women on the ghâts and in the streets—the rainbow-tinted cotton saris of the United Provinces, with their varied shades of lemon, rose, and the palest blue, contrasting with the simple white of Bengal and the deeper notes of indigo, crimson, orange, and chestnut from the rich silks of the Deccan and southern India. The painter need not search for subjects; he will rather be bewildered by the kaleidoscope of changing scenes, groups, and incidents, with marvelous backgrounds and surroundings, which pass before him in endless succession."

This book is a valuable contribution to the more popular literature of India, which, although it may not satisfy the special student, will be welcomed by that large class of readers who desire a good general knowledge of the religious history of this part of the East.

FREDERICK B. WRIGHT.

卐 卐 卐

SPANISH EXPLORERS IN THE SOUTHERN UNITED STATES*

THE second volume of *Original Narratives of Early American History,* which is being published under the auspices of the American Historical Association, has just appeared. This volume contains the narratives of the *Spanish Explorers in the Southern United States.* The first is the *Narrative of Alvar Nunez Cabeca de Vaca,* which, although full of interest, is disappointing in that the directions and distances given are so vague.

The second narrative is that of the *Expedition of Hernando de Soto by the Gentleman of Elvas.* This account was written after the author had returned from his travels and does not seem to be based upon field notes, but to be entirely drawn from his memory. For this reason some of his descriptions, especially as regards localities and distances, are exceedingly vague. However, the main route followed and the geographical features described are much more definite than in the narrative of Cabeca de Vaca. The general widespread interest which is everywhere felt in Hernando de Soto makes this narrative especially attractive to all classes of readers.

*ORIGINAL NARRATIVES OF EARLY AMERICAN HISTORY. *Spanish Explorers in the Southern United States* 1582-1543. The Narrative of Alvar Numez Cabeca de Vaca, edited by Frederick W. Hodge, of the Bureau of American Ethnology. The Narrative of the Expedition of Hernando de Soto by the Gentleman of Elvas, edited by Theodore H. Lewis, honorary member of the Mississippi Historical Society. The Narrative of the Expedition of Coronado, by Pedro de Castaneda, edited by Frederick W. Hodge. With maps and a facsimile reproduction. Charles Scribner's Sons, New York, 1907.

The third and last narrative is of the *Expedition of Coronado,* as written by Pedro de Castaneda, of Najera, some 20 years after the expedition. It is unfortunate that we have no earlier or more accurate account of Coronado's expedition, for his discoveries opened up an entirely new field and increased the geographical knowledge of our Southwest immensely.

Dr. J. Franklin Jameson, the editor, and the American Historical Association, are to be commended for their efforts in bringing within the reach of everybody translations of these original manuscripts bearing on the history of North America.

F. B. W.

卐 卐 卐

EDITORIAL NOTES

NEW DIRECTOR FOR THE AMERICAN SCHOOL OF CLASSICAL STUDIES IN ROME.—Prof. Jesse Benedict Carter has been appointed as director of the American School at Rome in the place of Prof. Richard Norton, who has resigned.

BRONZE STATUETTE FROM NORWAY.—A small bronze figure of a woman, together with 3 fibulæ of a primitive type, has been found near Bergen, in Norway. It appears to be the work of an Italian craftsman, under Ionian influence, and probably its presence here is to be accounted for by the very early amber trade which flourished between Jutland and Italy.

A PHŒNICIAN TOMB.—A remarkable megalithic tomb, found south of the waters of Merom, is described by G. Dalman. It is situated on a steep hill, near the village known as Khirbet Shana. The top of the tomb, built of 4 huge blocks of stone, is covered by a single stone 7.87 ft. broad, 9.7 ft. long, and about 2.9 ft. thick. In front is a portico made of 4 smaller blocks. No similar remains are found elsewhere in Palestine. The so-called tomb of Hiram in Phœnicia, however, bears some resemblance to it.

THE INDIAN WAR CUSTOM OF SCALPING.—According to a German, Doctor Friederici, scalping as practised among the American Indians, is, with a few exceptions, distinctly American. His investigations lead him to conclude that the custom was not general at the beginning of the historic period, but was confined to a narrow strip from the St. Lawrence to the Gulf of Mexico, approximately the territory held by Iroquoian and Muskhogean tribes and their near neighbors. The ordinary trophy of war was the head until the encouragement given by the colonial governments by offering prices for scalps caused the spread of the custom.

COPY OF THE DISCOBOLUS FOUND AT CASTELPORZIANO.—"In the royal reserve at Castelporziano, where the King and Queen of Italy spend holidays, Queen Elena, who is an enthusiastic archæologist, recently discovered a fine discobolus. Her Majesty actually tore her hands in her eagerness to unearth the relic. The torso, which is a copy of the famous Discobolus of Myron, in the Vatican Museum, has been restored by Prof. Rizzo, the famous archæologist, and has been presented by the King of Italy to the National Museum."—[*London News.*]

SCARAB ADDED TO THE BOSTON MUSEUM OF FINE ARTS.—The Boston Museum of Fine Arts has recently received, through the bequest of Mrs. Martin Brimmer, an unusually large scarab of the reign of Seti I. It is of a greenish-blue faience, measuring nearly 4½ in. by 3 in. A curious "harness," for suspension, is attached to it. This is made of pale gold and consists of 3 bands, one passing around the base, one transversely across the back, and the third lengthwise along the line of the wing covers. The beetle is raised on its legs above the base, as if walking. A few traces of the goldleaf, which once covered the face, are still visible. There is no inscription, but instead are 18 cartouches bearing the name and prename of Seti.

ANURADHAPURA, THE BURIED CITY OF CEYLON.—The British government has been excavating Anuradhapura, the ancient capital of Ceylon. This city, built when Buddhism was first introduced into Ceylon, covered about 100 square miles, and was in two parts, the inner city, which harbored 96,000 Buddhist priests, and the outer, where the king and common people lived. Repeated invasions of the Hindu Tamils and the rapid growth of tropical vegetation had covered the city to the depth of 6 or 8 ft. The surrounding plain, formerly fertile and well irrigated by water brought from the mountains and stored in artificial lakes, had been reduced to uselessness by the destruction of the canals and tanks. The British government, by repairing these waterways and thus storing up the rain of 4 months for use during the other 8 months, has made the land arable once more.

The most important remains in Anuradhapura are the Dagobas, of which there are 4. These are mounds of solid brick, shaped like beehives, from 300 to 400 ft. high. Originally they were painted white, but now they are covered with vegetation looking like wooded hills.

Other interesting objects are the "Yogi" stones, at which Buddhist priests gazed to get their minds in a proper condition to contemplate the Infinite. The "Jokunas," or bathing places, are numerous and beautiful, though simple in design. The "Moonstones," taking the place of thresholds, are perhaps the most unique relics of this ancient civilization. They are half circles, laid in concentric circles, with first a border of lotus leaves, then a procession of lions, horses, Brah-

many bulls, and elephants. Or it may be varied by a procession of geese. The center is taken up by half of the conventional lotus flower.

What is thought to be the oldest tree in the world is standing here. About 2,200 years ago a branch of the tree under which the Buddha Gautama sat when he attained Buddhahood, was said to have been brought to Anuradhapura and planted where it still grows, revered by pilgrims. [Abstract from *Scientific American.*]

EARLY NEW ENGLAND INDIANS.—We are inclined to ascribe to the Indians found by the earliest colonists on the New England coast the characteristics, habits, and belongings of the Indians of the western plains to-day. This is, in large part, a false conclusion, for ponies, rifles, and all kinds of iron implements were known to the Indians only after contact with white men. The early explorers left descriptions and pen-drawings of the Indians as they found them. Remains of their camps help us in forming an accurate idea of their mode of life. Great physical endurance and strength, hospitality, long memory of injury, keen sight, uncleanliness, cruelty to prisoners, unflinching bearing of pain—these were some of their characteristics.

Frequently their camp was located on a prominent elevation and was fortified with huge pickets made of small logs set a few feet in the ground, and extending 10 or 12 ft. into the air. These were placed close together and sharpened at the upper end. The wigwams within were of 3 shapes—hemispherical, conical, and long. A hemispherical one was 10 to 15 ft. in diameter and 6 ft. or more in height at the center. It was made by putting small poles into the ground in a circle and lapping the ends together. They were covered with strips of birch bark or mats. These and the conical were intended for one family, while the long wigwams were inhabited by a number of families. These latter were similar in construction, except that the poles were set in rows from 20 to 50 ft. or more long. A fire hole, about two feet in diameter and a foot or more in depth, was dug in the center, or, in the long house, in the center of the section set apart for each family. A smoke hole was made in the roof over the fire hole. Cooking and eating utensils were made of clay, soapstone, wood or gourds. The squaws made baskets from splints of hickory, birch, and ash, from reeds, rushes, cornhusks, silkgrass, and wild hemp.

Hunting, fishing, and agriculture were the occupations, when not on the warpath. Their boats in New England were usually dugouts, made from logs felled by fire and then hollowed by fire and scraping. Corn, beans, peas, squashes, and pumpkins were raised. Boiling was the common method of cooking, the meat or fish being cooked in the same dish with the vegetables. For clothing they used furs in winter, and almost nothing in summer. Barter with distant tribes evidently took place, for pieces of copper and red pipe-stone have been found in New England, although they do not occur there in the geological formation. [Abstract from Prof. J. T. Bowne in *Springfield Republican.*]